

Unit 16 Review Assignment p 416: 13-15, 18-26, 30-40, 54-57

$$(13) 2^5 = 32$$

$$\log_2 32 = 5$$

$$(14) 100^{1/2} = 10$$

$$\log_{100} 10 = \frac{1}{2}$$

$$(15) \left(\frac{3}{4}\right)^{-1} = \frac{4}{3}$$

$$\log_{\frac{3}{4}} \frac{4}{3} = -1$$

$$(18) \log_3 4$$

$$(19) \log_3 9 = 2$$

$$(20) \log_3 27 = 3$$

$$(21) \log_3 16 \text{ must be between 2 and 3}$$

$$(22) \log_3 16 = \frac{\log 16}{\log 3} = 2.5237$$

$$(23) \log_5 \left(\frac{1}{5}\right) = -1$$

$$(24) \log_5 .68 \text{ must be between } -1 \text{ and } 0.$$

$$\frac{\log .68}{\log 5} = -.2396$$

$$(25) \log_9 27 = \frac{3}{2}$$

$$9^{3/2} = 27$$

$$(26) \log 3.45 \approx .5378$$

$$10^{.5378} \approx 3.45$$

$$(30) \log_3 \left(\frac{mn}{5r}\right) = \log_3 mn - \log_3 5r$$

$$= \log_3 m + \log_3 n - \log_3 5 - \log_3 r$$

$$(31) \log_5 (x^2 y^4 \sqrt[5]{m^3 p}) = \log_5 x^2 y^4 (m^3 p)^{1/5}$$

$$= \log_5 x^2 + \log_5 y^4 + \log_5 (m^3 p)^{1/5}$$

$$= 2 \log_5 x + 4 \log_5 y + \frac{1}{5} (\log_5 m^3 + \log_5 p)$$

$$= 2 \log_5 x + 4 \log_5 y + \frac{1}{5} (3 \log_5 m + \log_5 p)$$

$$= 2 \log_5 x + 4 \log_5 y + \frac{3}{5} \log_5 m + \frac{1}{5} \log_5 p$$

$$(32) \log_7(7K + 5r^2)$$

$$(33) \log 45.6 = 1.6590$$

$$(34) \log .0411 = -1.3862$$

$$(35) \ln 470 = 6.1527$$

$$(36) \ln 144,000 = 11.8776$$

$$(38) \log_3 769 = \frac{\log 769}{\log 3} = 6.0486$$

$$(39) \log_{\frac{2}{3}} \left(\frac{5}{8}\right) = \frac{\log \frac{5}{8}}{\log \frac{2}{3}} = 1.1592$$

$$(54) \begin{aligned} PV &= 3500 \\ FV &= 8750 \end{aligned}$$

$$8750 = 3500(1+r)^{10}$$

$$(1+r)^{10} = \frac{8750}{3500}$$

$$1+r = \sqrt[10]{\frac{8750}{3500}}$$

$$r = \sqrt[10]{\frac{8750}{3500}} - 1$$

$$r = 0.0959$$

$$(9.6\%)$$

$$(40) x^{-3} = \frac{8}{27}$$

$$x^{-3} = \left(\frac{2}{3}\right)^3$$

$$x^{-3} = \left(\frac{3}{2}\right)^{-3}$$

$$x = \frac{3}{2}$$

$$(55) \begin{aligned} PV &= 48,000, \quad FV = 58,344 \\ 58,344 &= 48,000 \left(1 + \frac{.05}{2}\right)^{2t} \end{aligned}$$

$$\left(1 + \frac{.05}{2}\right)^{2t} = \frac{58,344}{48,000}$$

$$(1.025)^{2t} = \frac{58,344}{48,000}$$

$$\log 1.025 \left(\frac{58,344}{48,000}\right) = 2t$$

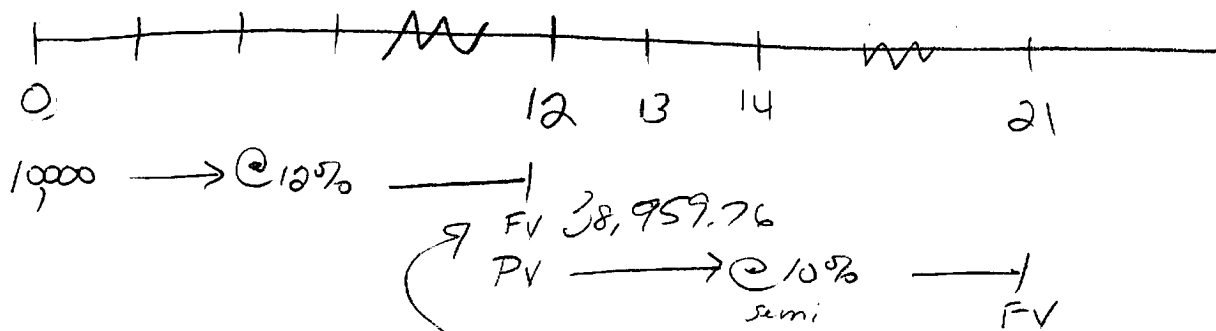
$$\frac{\log \left(\frac{58,344}{48,000}\right)}{\log 1.025} = 2t$$

$$t = \frac{\log \left(\frac{58,344}{48,000}\right)}{2 \log 1.025}$$

$$t = 3.9517$$

$$\boxed{4 \text{ years}}$$

(56) $PV = 10,000$



1st Part

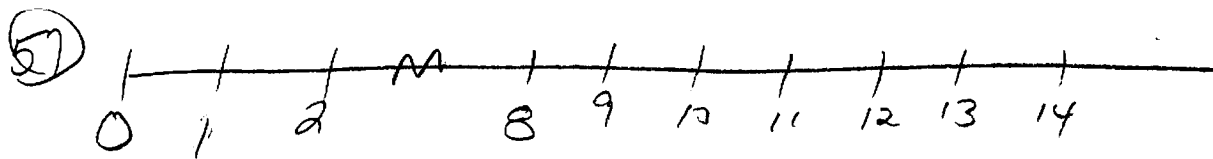
$$FV = 10,000 (1.12)^{12}$$

$$FV = 38,959.76 \text{ at end of yr 12}$$

2nd Part

$$FV = 38,959.76 \left(1 + \frac{.10}{2}\right)^{2 \cdot 9}$$

$$FV = \underline{\underline{\$93,761.31}} \text{ AT END of year 21}$$



$$PV \ 12,000 \rightarrow 5\% \rightarrow FV$$

$$PV \rightarrow 6\% \rightarrow FV$$

$$FV = 12,000 (1.05)^8$$

$$FV = 17,729.46 \text{ @ end of 8 years}$$

$$FV = 17,729.46 (1.06)^6$$

$$FV = \underline{\underline{\$25,149.59}} \text{ at end of year 14}$$